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(54) Title: DRIVER CIRCUIT

(54) Bezeichnung: TREIBERSCHALTUNG

(57) Abstract

The proposal is for a driver circuit with at least two output semiconductor switches (12, 14, 15, 22-24) in parallel and controllable by input control signals (I1) for switching a load. To this end, a delay device (16, 17, 25, 26) is provided to delay the input control signals (I1) of at least one of the output semiconductor switches (14, 15, 23, 24), while the input control signals (I1) are applied without a delay to at least another of the output semiconductor switches (12, 22). The driver capacity of the driver circuit is thus retained but the edge steepness is reduced especially at low loads and the quadrature-axis current component is minimised. Peak current loads are reduced or distributed in time.

(57) Zusammenfassung

Es wird eine Treiberschaltung mit wenigstens zwei

parallelgeschalteten, durch Eingangssteuersignale (I₁)
steuerbaren Ausgangshalbleiterschaltern (12, 14, 15,
22-24) zum Schalten einer Last vorgeschlagen. Hierzu ist eine die Eingangssteuersignale (I₁) für wenigstens einen der Ausgangshalbleiterschalter (14, 15, 23, 24) zeitlich verzögernde Verzögerungseinrichtung (16, 17, 25, 26) vorsesehen, während wenigstens ein anderer der Ausgangshalbleiterschalter (12, 22) unverzögert von den Eingangssteuersignalen (I1) beaufschlagt wird. Hierdurch bleibt die Treiberfähigkeit der Treiberschaltung erhalten, jedoch vermindert sich die Flankensteilheit-vor allem bei kleinen Lasten, und der Querstrom wird minimiert. Ladestromspitzen werden verringert bzw. zeitlich verteilt.

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H03K17/16 According to International Patent Classification (tPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 HO3K Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages 1-12,15, US 5 424 669 A (TEGGATZ ROSS E ET AL) X 17-21, 13 June 1995 (1995-06-13) 23,25 column 3, line 15 -column 4, line 18; figures 2.3 13,14, Y 16,22,24 13,14, WO 93 14568 A (BOSCH GMBH ROBERT) Y 16,22,24 22 July 1993 (1993-07-22) page 3, last paragraph -page 5, last paragraph; figure 1 US 5 398 318 A (HIRAISHI ATSUSHI ET AL) 5-10 Α 14 March 1995 (1995-03-14) column 8, line 55 -column 9, line 45; figures 9,10 Patent family members are listed in annex. Further documents are listed in the continuation of box C. · Special categories of cited documents : "T" tater document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-*O* document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled other means *P* document published prior to the international filing date but later than the priority date claimed in the art. *8" document member of the same patent family Date of mailing of the International search report Date of the actual completion of the international search 02/01/2003 19 December 2002 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo ni, Cantarelli, R Fax: (+31-70) 340-3016